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Assumptions to the Annual Energy Outlook 2010

Table 4.1. 2005 Households

Census Division	Single-family Units	Multiple family Units	Mobile Home	Total Units
New England	3,392,944	1,899,981	173,072	5,465,996
Mid Atlantic	10,077,231	4,784,686	254,610	15,116,527
East North Central	14,091,216	3,233,929	424,271	17,749,416
West North Central	6,107,582	1,406,214	340,759	7,854,555
South Atlantic	14,823,560	4,910,592	1,962,563	21,696,715
East South Central	5,438,660	729,591	724,503	6,892,754
West South Central	8,892,255	2,120,675	1,109,901	12,122,831
Mountain	5,680,398	951,482	922,976	7,554,856
Pacific	11,150,078	4,456,348	1,030,541	16,636,967
United States	79,653,923	24,493,498	6,943,196	111,090,617

Source: U.S. Department of Energy, Energy Information Administration, *2005 Residential Energy Consumption Survey*.

Table 4.2. Installed Cost and Efficiency Ratings of Selected Equipment

Equipment Type	Relative Performance[1]	2007 Installed Cost ($2007)[2]	Efficiency[3]	2020 Installed Cost ($2007)[2]	Efficiency[3]	Approximate Hurdle Rate
Electric Heat Pump	Minimum	$4,200	13.0	$4,800	14.0	25%
	Best	$7,500	17.0	$7,700	0.90	
Natural Gas Furnace[4]	Minimum	$1,900	0.80	$2,200	0.90	15%
	Best	$3,050	0.96	$2,700	0.96	
Room Air Conditioner	Minimum	$310	9.8	$310	9.8	42%
	Best	$925	12.0	$875	12.0	
Central Air Conditioner[5]	Minimum	$3,000	13.0	$3,000	13.0	25%
	Best	$5,700	21.0	$5,750	23.0	
Refrigerator (23.9 cubic ft in adjusted volume)	Minimum	$600	510	$600	510	10%
	Best	$1050	417	$1050	417	
Electric Water Heater	Minimum	$400	0.90	$400	0.90	50%
	Best	$1,400	2.4	$1,700	2.4	
Solar Water Heater	N/A	$3,500	2.0	$4,000	2.0	30%

[1]Minimum performance refers to the lowest efficiency equipment available. Best refers to the highest efficiency equipment available.

[2]Installed costs are given in 2007 dollars in the original source document.

[3]Efficiency measurements vary by equipment type. Electric heat pumps and central air conditioners are rated for cooling performance using the Seasonal Energy Efficiency Ratio (SEER); natural gas furnaces are based on Annual Fuel Utilization Efficiency; room air conditioners are based on Energy Efficiency Ratio (EER); refrigerators are based on kilowatt-hours per year; and water heaters are based on Energy Factor (delivered Btu divided by input Btu).

[4]Values are for Northern regions of U.S.

[5]Values are for Southern regions of U.S.

Source: Navigant Consulting, *EIA Technology Forecast Updates*, Reference Number 20070831.1September 2007.

Table 4.3. Capital Cost and Performance Parameters of Selected Residential Distributed Generation Technologies

Technology Type	Year of Introduction	Average Generating Capacity (kW)	Electrical Efficiency	Combined Efficiency (Elec. + Thermal)	Installed Capital Cost ($2005 per KW of Capacity)[1]	Service Life Years
Solar Photovoltaic						
	2007	3.0	0.16	N/A	$8,930	30
	2010	3.5	0.18	N/A	$8,467	30
	2015	4.0	0.20	N/A	$7,310	30
	2025	5.0	0.22	N/A	$4,997	30
	2035	5.0	0.25	N/A	$3,840	30
Fuel Cell	2007	10	0.308	0.697	$8,012	20
	2010	10	0.320	0.699	$6,199	20
	2015	10	0.335	0.705	$4,819	20
	2025	10	0.360	0.717	$2,663	20
	2035	10	0.360	0.723	$1,886	20

[1]Installed costs are given in 2005 dollars in the original source document.

Source: Solar Technology Specifications: Solar Energy Industries Association, *Our Solar Power Future - The U.S. Photovoltaic Industry Roadmap through 2030 and Beyond* (SEIA, September 2004). Fuel cells: Discovery Insights, *LLC, "Installed Costs for Small CHP Systems - Estimates and Projections"* (April 2005).

Table 4.4. Minimum and Maximum Life Expectancies of Equipment

Equipment	Minimum Life	Maximum Life
Heat Pumps	7	21
Central Forced-Air Furnaces	10	25
Hydronic Space Heaters	20	30
Room Air Conditioners	8	16
Central Air Conditioners	7	21
Gas Water Heaters	4	14
Electric Water Heaters	5	22
Cooking Stoves	16	21
Clothes Dryers	11	20
Refrigerators	7	26
Freezers	11	31

Source: Lawrence Berkeley Laboratory, *Baseline Data for the Residential Sector and Development of a Residential Forecasting Database*, May 1994, and analysis of RECS 2001 data.